

CWT Fry and Smolt Releases for Monitoring Future Changes in Juvenile Salmon Survival in the Delta

Patricia Little Brandes

Public Comments

No public comments were received for this proposal.

Technical Synthesis Panel Review

Proposal Title

#0328: CWT Fry and Smolt Releases for Monitoring Future Changes in Juvenile Salmon Survival in the Delta

Final Panel Rating
inadequate

Technical Synthesis Panel (Primary) Review

TSP Primary Reviewer's Evaluation Summary And Rating:

Summary. The overall goals of this project are to improve indices of CWT chinook salmon fry and smolt survival, and monitor change in salmon survival to determine how restoration actions have affected juvenile salmon survival. Estimates of juvenile survival are a critical component of modeling studies. There is a need to understand relationships between restoration efforts and variation in salmon abundance and survival. The authors propose to release large numbers of Coded Wire Tagged hatchery salmon fry and smolts, and measure recaptures in river, delta and ocean habitats. The ratio of recaptures to numbers released would provide survival estimates. There were several problems with this proposal. This is essentially a monitoring project that has been funded by other agencies in the past. There is no conceptual model on how to link restoration activities to salmon abundance or survival. There are many factors hypothesized to affect salmon survival, but none will be tested in this proposal. It is not specified how restorations will be measured, or related to survival. Survival could vary over three years and be unrelated to restoration efforts. Does that mean restoration has failed? There were no methods provided for recaptures, data management, dissemination, or integration with other projects. The proposal was not well written.

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Additional Comments:

The PI is not qualified to design nor analyze mark-recapture data and its unique statistical properties. This is surprising given the cost of the project. This proposal would greatly benefit from having an identified, professional biometrician. More use should be made of existing data to estimate sample sizes needed for release and recapture. No information from earlier work was presented to help evaluate proposed sample sizes and experimental design of this proposal.

Summary. The overall goals of this project are to improve indices of CWT chinook salmon fry and smolt survival, and monitor change in salmon survival to determine how restoration actions have affected juvenile salmon survival. Estimates of juvenile survival are a critical component of modeling studies. There is a need to understand relationships between restoration efforts and variation in salmon abundance and survival. The authors propose to release large numbers of Coded Wire Tagged hatchery salmon fry and smolts, and measure recaptures in river, delta and ocean habitats. The ratio of recaptures to numbers released would provide survival estimates. There were several problems with this proposal. This is essentially a monitoring project that has been funded by other agencies in the past. There is no conceptual model on how to link restoration activities to salmon abundance or survival. There are many factors hypothesized to affect salmon survival, but none will be tested in this proposal. It is not specified how restorations will be measured, or related to survival. Survival could vary over three years and be unrelated to restoration efforts. Does that mean restoration has failed? There were no methods provided for recaptures, data management, dissemination, or integration with other projects. The proposal was not well written.

Technical Synthesis Panel (Discussion) Review

TSP Observations, Findings And Recommendations:

CWT fry and smolt releases for monitoring future changes in juvenile salmon survival in the delta

This proposal is a mark-recapture monitoring study purported to be applicable to CALFED restoration efforts. The reviewers and panel agreed that this brief proposal was poorly developed, did not provide a conceptual model to meaningfully link restoration activities to salmon abundance, or provide adequate methods for the acquisition, management and analysis of the data. It was also felt that the investigator team did not have demonstrated qualifications to effectively design or implement the proposed study. Inclusion of, and consultation with a recognized fish biometrician would significantly enhance this proposal. Based on these obvious deficiencies, the review panel ranked this proposal as inadequate.

Final Ranking: Inadequate

Technical Review #1

proposal title: CWT Fry and Smolt Releases for Monitoring Future Changes in Juvenile Salmon Survival in the Delta

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	The objective as provided in the proposal -- to measure survival of chinook fry and smolts released from set locations -- is reasonably well stated. Clearly, successfully addressing this objective would be an important contribution to managing this species in the delta watersheds. Unfortunately, the authors do not clearly state goals and hypotheses nor do they describe credible linkages between those three elements of the proposal.
Rating	fair

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Comments	The study does appear to be justified. There is a need to monitor juvenile salmon survival from different points across the broad geographic landscape of the Delta watersheds. An understanding of the relationship between restoration efforts and variation in salmon abundance is essential. Unfortunately, the conceptual model, a description of how to go from one to the other, is not adequately presented.
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Technical Review #1

Rating	fair
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Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	<p>In very general terms, it seems the approach for a single aspect of the proposed work is supported: increase and standardize the releases of marked salmonid juveniles. A need exists to develop and describe how the particular new proposed releases will improve the monitoring of trends in abundance including, especially, a statistically rigorous argument for the same.</p> <p>No description of proposed procedures for recapture of marked specimens (or language arguing that existing methods are adequate) is presented nor is a description of how one might relate trends in abundance to restoration efforts provided.</p>
Rating	poor

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	<p>There is no doubt that far greater numbers of coded-wire tagged fish could be released into Delta watersheds to good effect. There is not enough support in the proposal to argue that the authors could achieve their ultimate objective should those releases occur.</p>
Rating	poor

Technical Review #1

Monitoring

If applicable, is monitoring appropriately designed (pre–post comparisons; treatment–control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	This is, fundamentally, a monitoring project. Very little information is presented in the proposal to describe how the data are to be managed, disseminated, or integrated into existing monitoring projects. As noted elsewhere in this review, essentially no details are provided to relate changes in salmon abundance or survival to restoration efforts.
Rating	poor

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	The authors propose to produce a single peer-reviewed article after three years of work. I would recommend at a minimum annual progress reports and a final report.
Rating	fair

Additional Comments

Comments	None
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Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	
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Technical Review #1

	I have no personal knowledge of the capabilities of the reseachers. Based on the summary of qualifications for the lead investigators provided with the proposal they seem qualified to perform the work.
Rating	very good

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	The budget appears to be reasonable and adequate for the proposed work.
Rating	very good

Overall

Provide a brief explanation of your summary rating.

Comments	The development of this proposal appears to have been rushed. This was an extremely difficult proposal to review and the document needs to be rewritten. I have read the thing carefully several times and am convinced of the need for the work. The general approach for the fieldwork -- to standardize and increase the number of release locations -- seems reasonable. The ultimate goal (I think) -- to relate trends in abundance to recovery efforts in the Delta watershed -- is laudable. Unfortunately, the arguments presented for achieving the former and the lack of essentially any description of how to achieve the latter do not support a high likelihood of success for either.
Rating	poor

Technical Review #2

proposal title: CWT Fry and Smolt Releases for Monitoring Future Changes in Juvenile Salmon Survival in the Delta

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	<p>The goal of this proposed research is to evaluate survival of hatchery reared fry and smolts of fall run chinook salmon released at a number locations. Fish marked with coded wire tags will be released and then recovered via an unspecified sampling program and through the ocean fishery. Recoveries will be used as a surrogate of survival. These estimates of survival, then, will be used to evaluate the success of restoration activities. The proposal hypothesizes that survival will increase with restoration activities. This a relatively simple hypothesis, which is unlikely to add much to our knowledge: over the three year study period, survival may increase, decrease, or vary with no trend. These, basically, are the only possible outcomes. The proposal does not state how restoration activities or effects will be measured or assessed. Therefore, there appears to be no objective means for evaluating the hypothesis. Further, given that survival is likely to vary from year to year independently of restoration, how will the various outcomes be evaluated? Would a negative relationship be clear evidence of a need to cease restoration activities? Or would it be dismissed as chance, or lack of power? If either of these, why would one evalate a positive relationship any differently?</p> <p>Is the idea timely? The proposal fails to make the case. Estimates of survival likely would be of some</p>
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Technical Review #2

	use, but because of design limitations it is not clear whether this proposed research will yield estimates of sufficient quality to be of general use.
Rating	poor

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Comments	<p>The proposal suggests, as a conceptual model, that fall run juvenile salmon survival is affected by residence time, river flow, temperature, and predation. None of these will be assessed in the current proposal. Rather, the proposal indicates there will be a test of the relationship between restoration and survival. True, restoration efforts may affect these key variables, but the connection is not made herein.</p> <p>See also below, APPROACH, but the proposed research fails to incorporate information from previous studies that might be very valuable in the design of this project. Thus, I see the study as poorly justified.</p> <p>The proposed study is a full-scale project: the goals and objectives are to measure survival in different areas and relate these to restoration activities. The concept is simple, but the requested hardware is extensive.</p>
Rating	fair

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be

Technical Review #2

useful to decision makers?

Comments	<p>The proposed research may lead to some new insight into the understanding of spatial variation in survival of fry and smolts. However, the proposal refers to previous work on this subject, but makes no use of it. What are the weak links? Where are they? A conceptual model would help.</p> <p>The proposal provides NO information that would allow an assessment of the adequacy of the sample sizes and experimental design. What are typical recovery rates? How much do they vary from year to year? This information is available and should have been used to guide development of this study. This is a major limitation.</p> <p>The PI proposes to release replicate samples of fish so that variation in survival estimates can be assessed. This assessment could be conducted, less expensively and probably with a greater level of confidence, through the use of simulation (bootstrapping). Further, given field estimates of survival in different years and at different sites that would be produced by the proposed study, simulation/bootstrapping could be used fully understand the strengths and limitations of these estimates.</p>
Rating	fair

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success?
Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	<p>Can the PI release and recapture salmon fry and smolts? This appears to be the case. However, the study is 3 years in duration and survival of smolts is to be assessed by returns to the ocean fishery. Is the proposed study of sufficient duration to allow the</p>
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Technical Review #2

	<p>fish to fully recruit to the ocean fishery? If not, how will this be considered.</p> <p>The PI proposes to estimate survival and then adjust survival estimates for sampling area and duration. There is no statistical model provided for this. Although we can multiply the two estimates (survival and volume samples) to obtain an estimate of the mean, the variance of this estimate is not so simply determined. How is it to be estimated? There are approaches to this problem in the literature. A study that fails to estimate variability cannot be supported.</p>
Rating	poor

Monitoring

If applicable, is monitoring appropriately designed (pre–post comparisons; treatment–control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	<p>Field sampling is not described. I cannot assess the adequacy of this portion of the project.</p> <p>I have to admit, I am not a salmon expert, but it seems reasonable to question returns to the ocean fishery. Will the fish fully recruit to the fishery? How would returns be evaluated? Will someone want each and every fish captured in the fishery? If not, what proportion of the catch will be sampled and how will estimates and their VARIANCES be estimated?</p>
Rating	poor

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Technical Review #2

Comments	<p>The project could provide useful information. However, the current design is weak and sampling adequacy is unknown.</p> <p>Given the duration of the project, the goal of relating interannual survival to restoration activities does not seem possible.</p> <p>The PI suggests that study results will be published, most likely in an on-line CALFED journal. Such results will not be widely seen. A bit of a shame to invest so much money to achieve such a modest result.</p>
Rating	poor

Additional Comments

Comments	<p>I am sorry that I cannot be more supportive of this project. The PI proposes to tag a large number of fish and estimate survival. I can see the utility in this information, but the present proposal will not deliver much of value. How much of this could be obtained from analysis of existing data? I think the proposal could be substantially improved by using existing data to demonstrate the validity of sample sizes.</p>
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Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	<p>The PI appears to be able to complete data collection and basic analysis. There is a critical need for a biometrician in this project. Had a biometrician been consulted in the design stages of this project, many of my criticisms might have been obviated.</p>
Rating	poor

Technical Review #2

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	<p>The proposed budget calls for purchase of large numbers of coded-wire tags. There is no rationale presented for the numbers requested, so it is difficult to evaluate this aspect of the budget. Perhaps too many have been requested, perhaps too few. Maybe, greater effort at a smaller number of sites would be more appropriate. There is no justification given for numbers of samples or sample sites.</p> <p>The remainder of the budget is modest.</p>
Rating	fair

Overall

Provide a brief explanation of your summary rating.

Comments	<p>I have repeatedly stressed the statistical shortcomings of this proposal. They are manifest. Involvement of a biometrician- a real one, not just someone who has had a course or two- is necessary.</p>
Rating	fair

Technical Review #3

proposal title: CWT Fry and Smolt Releases for Monitoring Future Changes in Juvenile Salmon Survival in the Delta

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	The stated goals and objectives are clearly stated and are consistent with the general hypotheses.
Rating	very good

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Comments	Ongoing efforts to estimate annual juvenile salmon survival is certainly an important component of the overall CVPIA and CALFED program and should continue as a full-scale implementation program.
Rating	very good

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	The establishment of a systematic tagging program at set locations each year will greatly enhance the
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Technical Review #3

	survival modeling efforts. Assuming that the ongoing juvenile salmon survival modeling effort have been proven to be scientifically sound through peer review, this set and repeatable annual tagging program should tighten the confidence bounds around the estimates.
Rating	very good

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success?
Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	This an ongoing effort with the permits and hatchery facility cooperation requirements in place. Therefore as proposed it is very feasible.
Rating	very good

Monitoring

If applicable, is monitoring appropriately designed (pre–post comparisons; treatment–control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	The establishment of systematic tagging at set locations each year will greatly enhance the survival modeling efforts and provide the baseline condition for measuring change over time. Assuming that the ongoing juvenile salmon survival modeling effort has proven to be scientifically sound through peer review this set and repeatable annual tagging program should tighten the confidence bounds around the estimates.
Rating	very good

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

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Comments	The product (juvenile survival estimates) is a very important component of the overall restoration effort. Good estimates of survival are a necessary part of evaluating the numerous managements efforts.
Rating	very good

Additional Comments

Comments	There is no way to judge the quality of the ongoing efforts. Only if past efforts and data analyses are acceptaale and have been peer reviewed would I support continued funding.
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Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	The lead investigator's summary of qualifications gives no description of professional or project management experience. No list of publications or evidence of peer review. In addition Mr. Marston of Calif. Fish and Game includes a list of qualilfications and revelant experience but has no specific role identified for him in the proposal. If this were a new study proposal it would not pass muster for funding.
Rating	fair

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	The budget appears reasonable for a three year effort. There are several typos noted. The proposal preperation seems hurried. The internal adminisrative overhead, internal employee overhead and agency overhead all in
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Technical Review #3

	addition to the usual employer contirbution to retirement, health insurance, medicare, sick leave and vacation is very confusing.
Rating	good

Overall

Provide a brief explanation of your summary rating.

Comments	It is very difficult to judge the past efforts and the lead investigator's qualifications as no information was provided from past efforts. The proposal gives the appearance that the preparer assumes the tagging program will be funded simply because it is an ongoing activity.
Rating	good

